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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,512	12/26/2000	Jean-Pierre Giacalone	TI-31754	4129

23494 7590 04/23/2004

TEXAS INSTRUMENTS INCORPORATED  
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DALLAS, TX 75265

EXAMINER
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CHAUHAN, ULKA J

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 04/23/2004

15

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/748,512

Applicant(s)

GIACALONE ET AL.

Examiner

Ulka J. Chauhan

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 is/are allowed.
- 6) ☒ Claim(s) 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/26/04 has been entered.

2. Claim 15 is newly added; claims 1-15 are pending.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,920,353 to Diaz et al.**

5. As per claim 15, Diaz teaches an architecture of a multi-standard decoder 200 which can decode input that is encoded in any of a number of different formats and that is used for video telephony [col. 5 line 66-col. 6 line 15, col. 6 lines 25-28, and Fig. 2]. Diaz discloses a computer 80, a memory 160 ("*a random access memory*"), and the decoder 200' all coupled to a processor 75 ("*a processor for executing software instructions for processing images and video*") through a bus 77 ("*a bus*") [Fig. 5]. Diaz discloses that the decoder 200 is composed of functional blocks or modules connected to memory 160 and a processor 75 to allow the processor 75 to control the

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access of the functional blocks [col. 12 lines 40-47]. The decoder 200 modules include block decoder module 50 containing IDCT module 46, motion compensation engine 90 containing half-pel filter 78 for performing half-pixel interpolation, an encoder module 88 containing DCT circuit 112 and motion estimation engine 86 ("*one or more hardware accelerators for performing certain video processing functions*") [Figs. 2 and 3]. Diaz also discloses that the processor 75 allows some of the functional blocks of the decoder 200' to be performed in software in the processor 75 to either completely replace some or part of some of the functional blocks, or to allow the function to be performed in either hardware or software ("*certain software instructions can be processed by either the processor or a hardware accelerator*") [c. 13 ll. 38-42 and c. 8 ll. 5-15]. And Diaz discloses that the decoder operates in real-time and dynamically determines if a function can be performed in software or hardware [c. 9 ll. 51-58 and c. 10 ll. 24-28]. How much of the operation is performed in the processor 75 is based on balancing the processing capacity and speed of the processor 75 with the complexity and amount of processing required to perform the function as specified by the standard to which the encoded bitstream complies in real time ("*the decision to process the certain software instruction in the processor is made in real-time*") [c. 10 ll. 6-11].

#### ***Allowable Subject Matter***

6. Claims 1-14 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter: the cited prior art does not disclose or render obvious the combination of elements recited in the claims as a whole. Specifically, the prior art fails to disclose or render obvious the following limitations: a motion estimation hardware accelerator and a transform coding hardware

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accelerator, performing motion estimation functions and transform coding functions respectively, in response to requests from a processor and returning the result to the processor for further processing as per amended independent claims 1 and 7.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 6587590 to Pan discloses a hybrid scheme approach that combines a specially designed hardware component with an ordinary DSP chip to: (1) Use a specially designed ASIC with a parallel structure to implement the 2-D DCT/IDCT and the motion estimation; and (2) Use an inexpensive DSP to implement the serial operations and provide the control structure to the ASIC. With this hybrid approach, the combined system not only can take advantage of the powerful parallel processing abilities of the hardware components, but also possesses the flexibility of software programming to cope with different encoding/decoding parameters required. The hybrid scheme, which includes dedicated 2-D DCT/IDCT and motion estimation (for encoder only) ASIC components plus a serial structured DSP chip, might be the best feasible architecture to meet the requirements of MPEG-2 real-time encoding/decoding.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Ulka Chauhan** whose telephone number is (703) 305-9651. The examiner can normally be reached Mon.-Fri. from 9:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Matthew Bella**, can be reached at (703) 308-6829.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

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Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA, Sixth Floor (Receptionist).

10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 305-4700.



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Ulka J. Chauhan  
Primary Examiner  
Art Unit 2676

ujc  
April 21, 2004